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PRIVATE AND INDUSTRIAL
POINT SOURCES

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This is part of the Yellowstone-Tongue APO's report on wastewater discharges.

This report was financed by a
Section 208 Areawide Waste
Treatment Management Planning
Grant from the U.S. EPA.

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PRIVATE DOMESTIC POINT SOURCES

A number of domestic wastewater discharges have been identified during the 18 months of plan preparation. Most of these were brought to the attention of the YTAPO by public officials or were discovered by staff members while doing unrelated field work. These discharges and their current status is discussed below.

In the Miles City area several problems exist concerning private domestic wastewater discharges. Several houses have inadequate septic tank drainfields resulting in seepages to the Haynes Avenue drainage ditch. At least three houses discharge partially treated sewage directly to this ditch. The problem has been acknowledged by the city/county planner and the county sanitarian, as well as the YTAPO, and is expected to be abated when the Haynes Avenue sewer line is installed as described in the 201 facilities plan for Miles City.

One year ago the YTAPO was informed of the presence of a sewage discharge of partially treated wastewater originating from the Aye Subdivision south of Miles City. Since then, the discharge has been diked to prevent that discharge, allow further treatment and allow final disposal by evaporation and percolation. However, the lagoon appears to be undersized and poorly constructed allowing seepage to occur through the dike and into an old oxbow of the Tongue River. This was witnessed on June 8, 1977, by a YTAPO staff member.

Because of the diligent efforts of various people, a number of problems have been cleared up, at least temporarily. The Crossroads Inn had a problem with a mound system that discharged partially treated wastewater that seeped into an irrigation ditch. Inspection on June 8, 1977 showed that this was no longer the case. This abatement may be due to an extended dry season and should be monitored by the Custer County Sanitarian to ensure that the resurfacing problem does not recur.

The C & L Trailer Court had similar resurfacing problems from a septic tank system. This too, has apparently been corrected. The ground between the septic tank drainfield and the Miles City slough storm water drainage system is soft due to wet soils immediately below the surface. This system should also be closely monitored to see if the situation has been permanently corrected.

The Anderson Apartments, north of the Yellowstone River and north of Miles City has a septic tank treatment system which discharges its partially treated wastewater to a surface drainage way. This wastewater ponds in two connected pools, that are not fenced, before running down several hundred yards of steep terrain. Originally this water ran directly into the Yellowstone river until Mr. Anderson was notified by the Water Quality Bureau (1976) to correct the problem. Since then a dike has been built about 50 feet above the dirt road running parallel to the Yellowstone River. There was no discharge as of June 8, 1977. Water in the pond was about two or three feet deep and the dike had about 3 feet of additional free board at the time. There is no discharge device other than a crude dirt spillway at one end of the dike. The pond should be capable of holding about 0.5-1.0 acre-feet which appears to be adequate for the amount of sewage to be retained. However, the drainage blocked by the dike is probably 20 or more acres in size with steep, easily erodible terrain. Should a thunderstorm of even moderate intensity develop, the reservoir would quickly fill, overflow, and very possibly wash out the retaining dike, resulting in the discharging of the sewage to the Yellowstone River.

Brewer's Trailer Court, west of Forsyth, is the site of another wastewater resurfacing problem. Partially treated domestic wastewater is conveyed via plastic pipe buried in a gravel trench. The pipe itself surfaces to cross a gravel road through a culvert and enters another gravel trench. The trench extends about 110 meters west to a swampy area next to a railroad fill. At the time of inspection, grayish water was setting in gravel-pock holes and a black sludge was deposited next to the foot of the trench outcrop. No pipe exits from the trench but the water looked and smelled of sewage. The Rosebud County Sanitarian is well aware of this problem and is actively seeking its correction.

Another trailer court, adjacent to Butte Creek in Rosebud, is discharging partially treated wastewater. The water resurfaces and flows down the bank of Butte Creek. It is assumed that this problem will be corrected when the community of Rosebud installs its planned central sewer system.

According to the former Custer County Sanitarian, two houses in the Stand Hope Addition near Baker discharges partially treated wastewater to pits. Occasionally these pits will overflow and discharge into a ditch. The problems with tight soils and septic tank failures around Baker were the main concerns voiced by the Fallon County Commissioners when the YTAPO was requested to initiate a facilities plan for Baker and the surrounding areas. This plan will outline the corrective measures necessary to alleviate these problems.

Should a private domestic discharge exist, it is recommended that the Water Quality Bureau remain the agency responsible for regulating these point sources. The legal responsibility of proper disposal of domestic wastewater will remain with the discharger. The enforcement of existing laws concerning discharges and their permits will be enhanced by responsible sanitarians, county planners, and other public officials through keeping information readily available to the public and by continual vigilance for domestic waste disposal problems.

AGRICULTURAL POINT SOURCES

The two basic types of agricultural point sources are discharges from feed lots and of irrigation return flows. In order for a feed lot to be considered a point source, it is necessary that runoff enter state waters via a "discernible, confined, or discrete conveyance ...". In most cases, application of reasonable management methods will eliminate any discharge from a feed lot to state waters. Among these methods are diverting runoff to nearby fields, catching runoff in holding ponds, or placing new feeding operations such that runoff will not leave the owner's property.

It is recommended that the Water Quality Bureau develop a general permit system that would automatically allow runoff from feedlots, due to natural precipitation, to be discharged to state waters. If a feed lot is of sufficient size, or located in such a manner to cause degradation of the receiving waters' intended use as described in MAC 16-2.14 (10-S14480) Water Quality Standards, promulgated by the Montana State Department of Health and Environmental Sciences, the owner shall be required to apply through the NPDES, for a specific permit allowing the discharge.

The recommendation for handling the permits for irrigation return flows will be similar. Since, by its very nature, irrigation involves runoff, and subsequent return flow discharges, it will be necessary for nearly every irrigator to obtain a permit. Since this would be entirely ridiculous from a cost-effectiveness point of view, it is recommended that a general permit be issued by the Water Quality Bureau to irrigation districts or to irrigators along defined reaches of streams. Since the best practicable wastewater treatment technology (PWTT) is required under the permit system a flexible definition for BPWTT shall be designed. It is suggested that, in the interest of flexibility and cost-effectiveness, best management practices (BMP) be equated with BPWTT in relation to return flows. BMP's for irrigated cropland are described in the agricultural nonpoint chapter. Should an individual irrigation system discharge water in such a manner as to cause degradation as described in the feed lot section, the owner shall be responsible for applying through the MPDES for a specific permit allowing the discharge.

Presently no permits, general or specific, have been issued concerning irrigation return flows. Data is being gathered and organized bo determine loading conditions upon major receiving streams such as the Yellowstone, Tongue, and Powder Rivers.

INDUSTRIAL POINT SOURCES

As of August, 1975, 21 industrial permits were active within the YTAPO area. Since that time the majority of these (18) permits allowing Gary Operating to discharge saline water separated from produced oil, have been discontinued as of July 1, 1977. Gary Operating is refitting the Belle Creek field to totally inject the produced water. Figure 1.

Shell Oil Company, who operates the portion of the Cedar Creek Anticline in Fallon County presently has two permits which are active. Peabody Coal has been issued a permit to discharge excess water from its coal mining operations. A major portion of industrial water is produced and used in the production of oil. Table 1 illustrates the quantities of water involved. Table 2 shows those fields using secondary recovery via water flooding and Table 3 shows areas of wastewater injection.

It is recommended that industrial wastewater discharge permits continue to be administered by the Water Quality Bureau. Compliance monitoring shall be continued by that agency. Municipalities and counties that receive industrial wastes for treatment within public wastewater treatment systems shall be responsible for enforcing adequate pretreatment of industrial wastes before being discharged to their respective systems. Local governmental bodies are also in an ideal position to identify industries that should maintain a discharge permit. While they may not be under legal obligation to report these discharges to the enforcement agency, the Water Quality Bureau, they should be particularly careful that industries within their boundaries are aware of permit requirements and any discharges are recognized and allowed by the Montana Department of Health and Environmental Sciences (MPDES).

Several categories of industrial wastewaters are produced in Southeastern Montana. Saline water, ranging from 2,000-5,000 mg/l TDS, are co-produced with oil in oil fields. The quantity of water produced varies considerably from well to well, some units now produce more water than can be allowed to evaporate or seep away. Depending upon the oil bearing zone this supply of water may be economically reinjected in a water flooding scheme in secondary recovery operations. If this is not practical, and the wastewater must be discharged, a permit must be obtained outlining the limits that must be met in order to comply with the water quality standards set by the State of Montana.

Electrical generation at the Colstrip facilities involves cooling tower, scrubber and ash-carrying wastewaters. It is the policy of the state to allow no discharge of these types from any new plants. It is recommended that this policy continue, especially concerning scrubber and ash wastewater.

Gravel washing operations currently use settling pits to remove most of the settlable solids before discharging any excess water. It is usually a rather simple procedure to recycle this water for continual washing, eliminating a need for discharge.

Seepage water pumped from strip mines will occasionally exceed that usable by the mining operation and is now discharged occasionally. The permits regulating these discharges should evaluate the possible degradation of receiving waters due to a high mineral content and heavy metals.

Hospitals are usually connected with municipal wastewater systems and have a potential of discharging a large quantity of bacteriocides and cleansing agents which could cause a significant shock load to a treatment system. It should be the responsibility of the respective municipality to ensure that adequate pretreatment of these wastes exists. Such pretreatment could be as simple as dumping over a longer period of time rather than large loads in a short time.

Packing plants, garages, and other small commercial operations each possess unique types of contaminants which must be evaluated on a case-by-case basis.

Tables 4 through 7 summarize information on existing permits.

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Gary Operating Company
Belle Creek Field

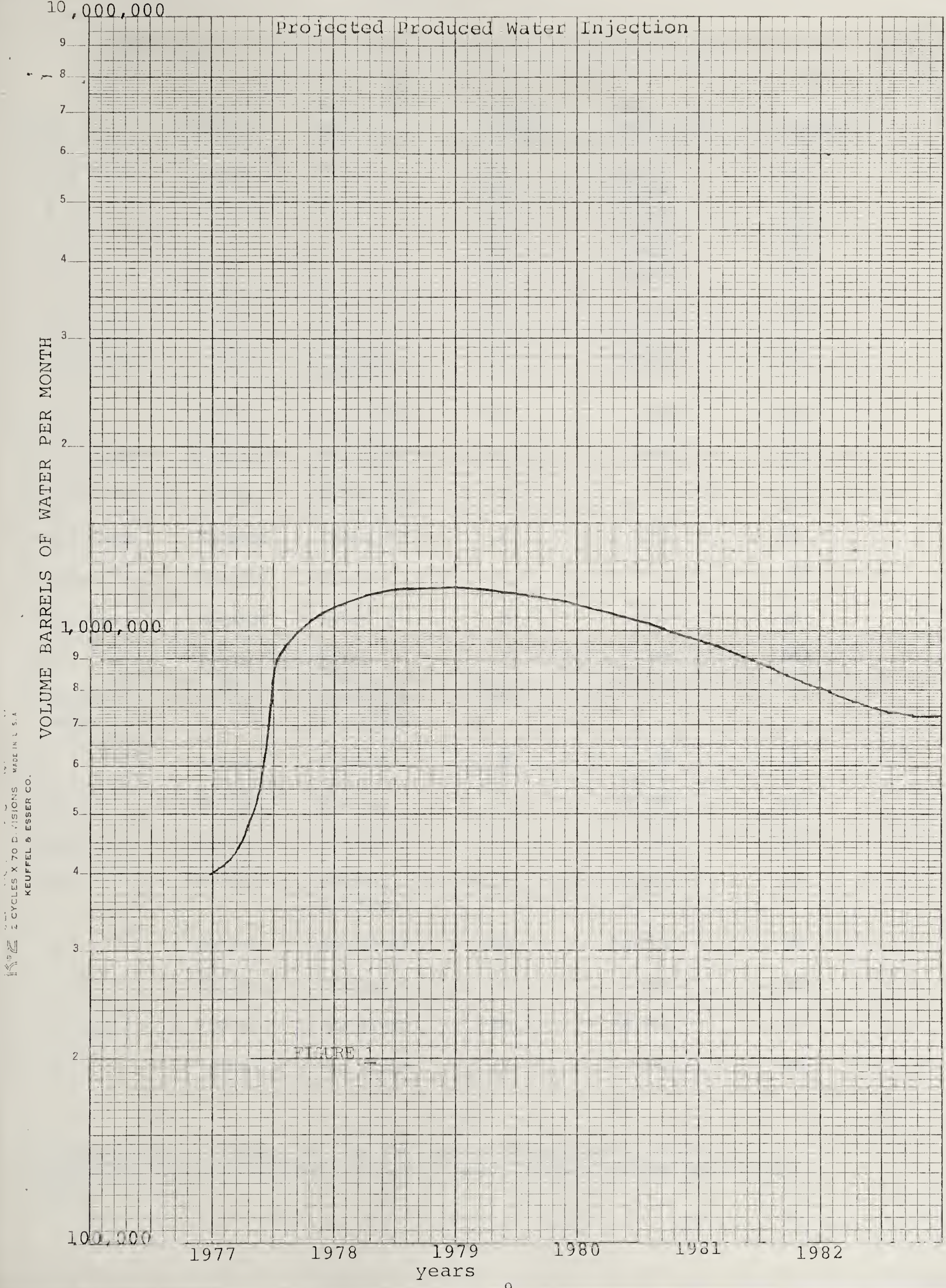

FIGURE 1

Table 1. OIL FIELDS IN THE YELLOWSTONE-TONGUE APO AREA

Unit	County	Production Zone	Number of Wells	Water Produced[Φ]	Percent[†]
Belle Creek	Powder R.	Muddy	194	33,600	55
A	"	"	65	13,600	47
B	"	"	16	4,980	73
C	"	"	15	2,120	42
D	"	"	33	4,800	64
E	"	"	27	3,400	75
Cabin Creek	Fallon	Sil-Ord	69	11,400	74
Cabin Creek	Fallon	Mission Canyon	16	26,400	98
Cupton	Fallon	Red River	10	190	49
E. Lt. Beaver	Fallon	Red River	9	220	41
Fertile Prairie	Fallon	Red River	2	7	16
Gumbo Ridge	Rosebud	Tyler "C"	6	180	46
Hibbard	Rosebud	Amsden	1	0	0
High Five	Rosebud	Tyler	9	220	37
Leary	Powder R.	Muddy	3	42	28*
Lookout Butte	Fallon	Red River, Interlake	26		
Man	Fallon	Sil-Ord	8	78	32
Monarch	Fallon	Madison	2	2,190	99
Monarch	Fallon	Sil-Ord	5	49	23
Pennel	Fallon	Sil-Ord., Mis-Can.	114	3,940	34
Pine	Fallon	Red River	100	19,400	76
Pine A	Fallon	Madison	3	7,290	99
Pine A & E	Fallon	Red River	84	18,400	77
Pine C	Fallon	Red River	17	960	65

Φ Average barrels of water per day for January through April, 1977.
† Percentage of total production which is water, January through April, 1977.
* 1976

Table 1 cont., Oil Fields in the Yellowstone-Tongue APO Area

Unit	County	Production Zone	Number of Wells	Water ProducedΦ	Percent†
Ranch Creek	Powder R.	Muddy	27	4,930	71
Rattler Cr.	Rosebud	Tyler	2	0	0
Repeat	Carter	Red River	1	300	91
Rosebud	Rosebud	Tyler "B"	5	1	0
S. Wills Cr.	Fallon	Red River	3	260	71
Stensvad	Musselshell-Rosebud	Tyler "B"	4	2,210	93
Sumatra	Rosebud	Tyler "B"	8	170	16
Sumatra	Rosebud	Tyler "B"	2	0	0
Sumatra Area	Rosebud	Alaskan Bench	1	0	0
Sumatra Area	Rosebud	Tyler "B"	5	0	0
Sumatra	Rosebud	Tyler "B"			
Central	"	" "	19	19,900	93
Northeast	"	" "	7	1,450	87
Southeast	"	" "	17	1,180	84
West	"	" "	27	8,860	88
Total	"	" "	107	31,800	85
Wright Creek	Powder R.	Muddy	3	357	92

Φ Average barrels of water per day for January through April, 1977.

† Percentage of total production which is water, January through April, 1977.

Table 2 SECONDARY RECOVERY

Unit	Water Injected Cumulative BBL thru April, 1977	Water Produced Cumulative BBL thru April, 1977	Injection Pressure Ave. psig Jan.-Apr. 1977
Belle Creek			
A	80,121,605	22,480,895	1745
B	22,396,493	6,885,564	1515
C	12,408,266	2,706,710	1620
D	15,301,401	4,646,068	1755
E	11,359,509	3,836,777	2155
Ranch Cr.	26,764,479	8,648,206	1770
Cabin Creek (Sil-Ord)	161,237,716		2275
E. Lt. Beaver	10,314,590		2375
Little Beaver	26,018,459		2325
Lookout Butte	2,177,028		1750
Lookout Butte Coral Cr. Unit	21,314,988	7,193,431	2125
Pennel	54,952,605		1975
Pine A & E	141.345.867		2610
Pine C & D	15,689,164		2240
Stensvad	27,687,508		700
Sumatra	217,131	60,000	425
Sumatra			
Central	64,631,547		1740
Northeast	4,054,777		1925
Southeast	8,669,693		2045
West	16,631,772	2,859,658	1590

Table 3 DISPOSAL OF PRODUCED WATER

Unit	Disposal Zone	Water Injected*	Cumulative Water Injection (bbl.)†	Water Pressure (psig.)*
Cabin Creek	Siluro-Ordovician	45,160	19,448,471	400
Lt. Beaver East	Madison	18,110	2,669,831	150
Pennel	Mission-Canyon	18,280	13,593,266	1000
Pine	Dakota	15,800	6,802,367	
West Sumatra	Mission-Canyon		1,513	

* Monthly average for Jan.-Apr.,1977
† As of April, 1977

Table 4.

Discharger: Peabody Coal Company

Permit Number: MT-0000884

Expiration Date: December 31, 1981

Location:

City: Colstrip

County: Rosebud

Unit:

Receiving Waters: Miller Coulee

Groundwater seepage into strip mine.

Effluent Limitations:

Parameter	Limitation	Self-Monitoring Requirements
Flow m^3/day		daily-instantaneous
Total Dissolved Aluminum		monthly - grab
Total Dissolved Iron		monthly - grag
Total Lead		monthly - grab
Alkalinity		monthly - grab
Acidity		monthly - grab
Total Dissolved Solids		monthly - grab
Turbidity		monthly - grab
Sulfate		monthly - grab
Oil & Grease	10	monthly - grab
pH	6.0 - 9.0	monthly - grab
Total Suspended Solids	30	monthly - grab

Table 5.

Discharger:	Shell Oil Company
Permit Number:	MT-0000329
Expiration Date:	June 30, 1977
Location:	T4N E62E 19D
City:	
County:	Fallon
Unit:	Little Beaver Injection Plant
Receiving Waters:	Big Gumbo Creek

Permit was renewed upon request by downstream ranchers stating that they could put the discharge to beneficial use. Shell has agreed to discharge only during emergencies, such as equipement failure.

Effluent Limitations:

Parameter	Limitation	Self-Monitoring Requirements
Flow		semiannually-instantaneous
Dissolved Solids	4000	Semiannually-grab
Chloride	1000	Semiannually-grab
Sulfate	1800	Semiannually-grab
Oil & Grease	10	semiannually-grab
pH	6.5 - 8.5	semiannually-grab

Table 6.

Discharger: Shell Oil Company
Permit Number: MT-0000311
Expiration Date: June 30, 1977 - renewed
Location: T10N R58E 28B
City:
County: Fallon
Unit: Mission Canyon Treating Plant
Receiving Waters: Unamed Tributary to Cabin Creek

Permit was renewed upon request by downstream ranchers stating that they could put the discharge to beneficial use. Shell has agreed to discharge only during emergencies, such as equipment failure.

Effluent Limitations:

Parameter	Limitation	Self-Monitoring Requirements
Flow		semiannually-instantaneous
Dissolved Solids	6800	semiannually-grab
Chloride	2800	semiannually-grab
Sulfate	2000	semiannually-grab
Oil & Grease	10	semiannually-grab
pH	6.5 - 8.5	semiannually-grab

Table 7.

Discharger: Union Texas Petroleum Division Allied Chemical Corp.

Permit Number: MT-0023752

Expiration Date:

Location:

City:

County: Fallon

Unit: Glendive Gas Plant

Receiving Waters:

Effluent Limitations:

Parameter	Limitation	Self-Monitoring Requirements
Flow		quarterly-instantaneous
TDS	3500	quarterly-grab
COD	100 mg/l	quarterly-grab
Oil & Grease	10 mg/l	quarterly-grab
pH	6.5 - 8.5	quarterly-grab